

Restoring a Damaged Shoreline

Using Natural Materials

North Saskatchewan Watershed Alliance
Riparian Workshop

October 25, 2018



**WABAMUN WATERSHED
MANAGEMENT COUNCIL**

www.wwmc.ca

Healthy Lake Shores

- Natural Riparian Areas
 - Filter and process sediments and nutrients
 - Slow storm flows
 - Protect and stabilize shorelines
 - Provide habitat—terrestrial and aquatic
- However, many people wish to have lakeside cottages with beaches and unrestricted views of the lake.

Cleared Shoreline



Photo: NSW Riparian Health Assessment of Wabamun Lake, 2015

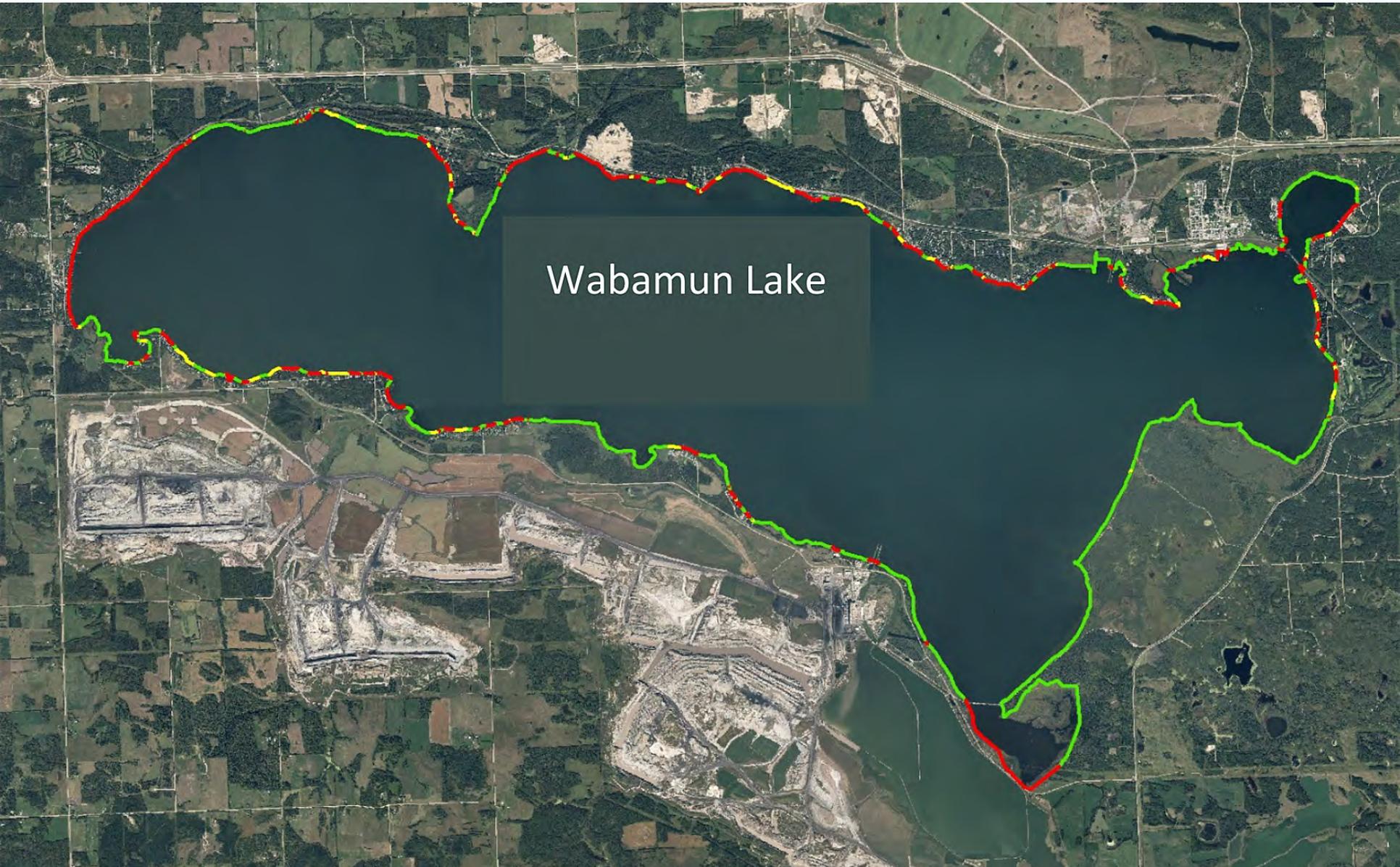
NSWA Riparian Health Assessment of Wabamun Lake

- In 2014 the WWMC asked the NSWA to assess the health of the Riparian Management Area of Wabamun Lake.
- Using the new (at the time) technology of Unmanned Aerial Vehicle (UAV or drone) videography.
- Grossly assessed the Riparian Area as either Healthy (Green), Moderately Impaired (Yellow) or Highly Impaired (Red)

Healthy: 57%

Moderately Impaired: 9%

Highly Impaired: 34%



Wabamun Lake

Natural Shoreline—Paul First Nation



Photo: NSW Riparian Health Assessment of Wabamun Lake, 2015

Cottage with Naturalized Shoreline



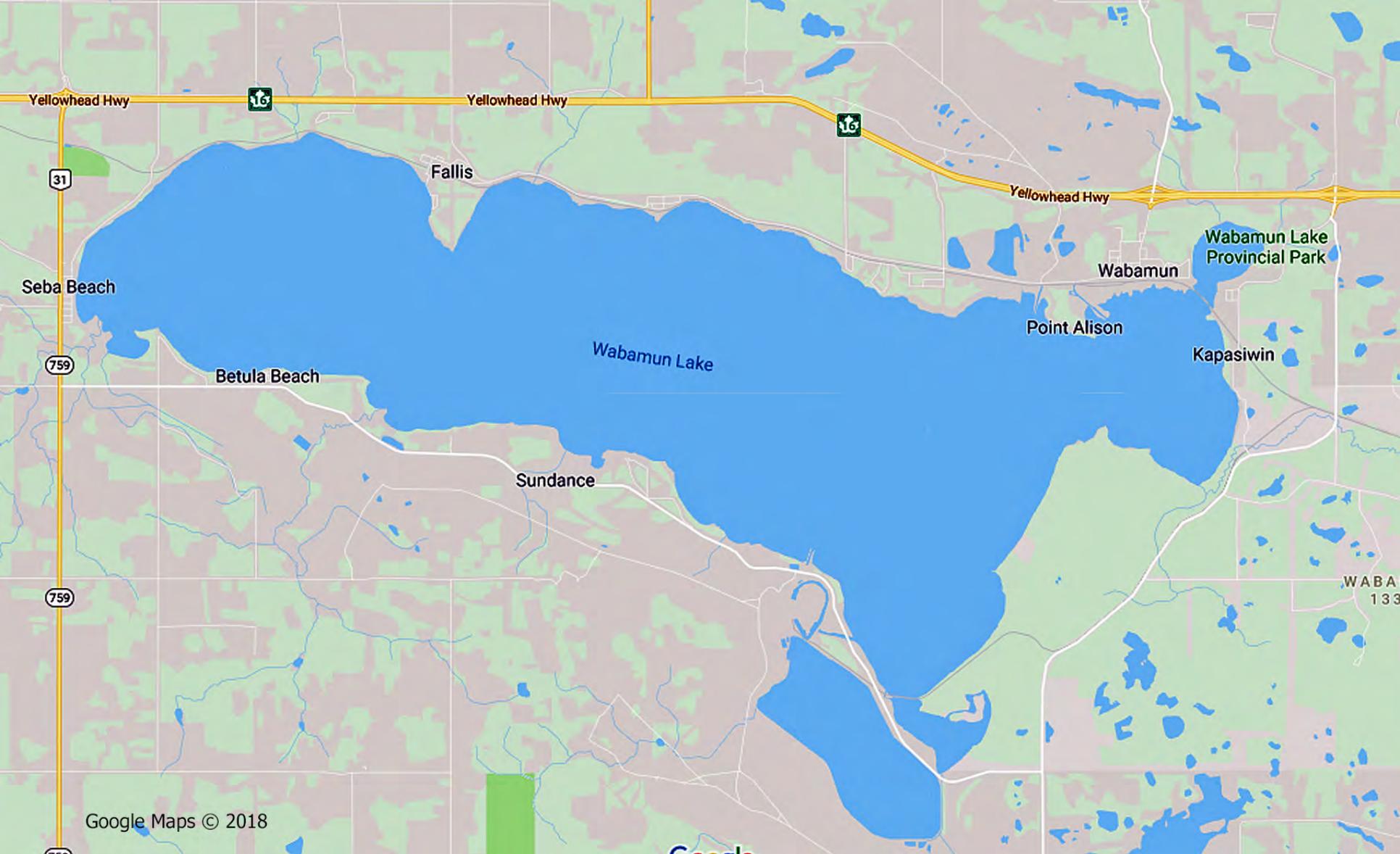
Photo: NSW Riparian Health Assessment of Wabamun Lake, 2015

Love Your Lake

- Education is key to getting land owners to naturalize their shorelines.
- Seeing Cyanobacteria (blue-green algae) blooms on other lakes has helped.
- In 2015, the WWMC partnered with Nature Alberta, through the Love Your Lake program, to naturalize 35 lakeshore properties, covering about 700 metres of shoreline.

2018 Ice Heave

- In the early morning of January 2, 2018, the ice on Wabamun Lake suddenly expanded laterally.
- Severe damage occurred at shoreline properties along the NW shore, from Seba Beach to west of the Village of Wabamun.



Yellowhead Hwy



Yellowhead Hwy



Yellowhead Hwy

Fallis

Wabamun Lake
Provincial Park

Seba Beach

Wabamun

Point Alison

Kapasiwin



Betula Beach

Wabamun Lake

Sundance



WABA
133

Google Maps © 2018















What Happened?

- Water expands when it freezes—it floats.
- As ice gets colder, it contracts—resulting in cracks in the ice.
- Water enters the cracks and freezes, increasing amount of ice.
- As ice gets warmer, it expands, often heaving into ice ridges on the lake.



- Snow insulates the ice against temperature changes.
- If there is little snow cover, ice temperature changes more rapidly.
- If a deep-freeze is followed by a rapid warming (as occurred on January 2, 2018), the ice expands rapidly.
- If conditions are right, this rapid expansion results in ice heaving along and into the shore.

Shoreline Restoration

- Many people with damaged shorelines wanted to repair them as quickly as possible.
- But the permitting process was onerous and time consuming.
- The WWMC and lakeside communities worked with AEP and Parkland County to streamline the process and get the information out in a timely manner.



- Works on reserves are governed and approved by the local municipality.
- Works on the bed and shore require approval from Alberta Environment and Parks.
- Works on private property might require a municipal development permit.

AEP Approvals Process

1. Determine property boundaries
2. Evaluate the risks
 - Erosion (Google: AEP Erosion Potential Calculator)
 - Low—allow natural regeneration,
 - Medium—bio-engineering and armoring,
 - High—engineered solution
 - Riparian Condition: Healthy, Moderately or Highly Impaired
3. Design the project: map, sketched plan, cross-sections, proposal, photographs
4. Submit regulatory application
5. Google: Alberta Environment lakeshores and shorelines

Workshop

- Ice Heave—an opportunity to educate shoreline owners about natural restoration.
- David Polster of Polster Environmental Services
 - presented a Shoreline Restoration Workshop on May 11 and 12, 2018
 - 50 people attended the classroom session on Day 1.
 - 20 people attended the field session on Day 2.

Classroom

- General theory of using natural processes in restoring disturbed areas.
- Nature responds to natural disturbances, such as landslides, avalanches, fires, etc. by succession of vegetative events.
- Many of those processes can be enhanced to restore disturbed shorelines.

Today we will look at some of the things that we can do to transform traditional reclamation to productive ecological restoration that returns the natural capital upon which we, as a species, depend



Turkey Vulture



Field Demo

- Pat and Leslie Taylor of Seba Beach donated their property as a demonstration site.
- Participants first collected willow, dog wood and balsam poplar cuttings.
- They planted the cuttings on the disturbed shoreline to stabilize it and built a wattle fence to protect against wave action.

















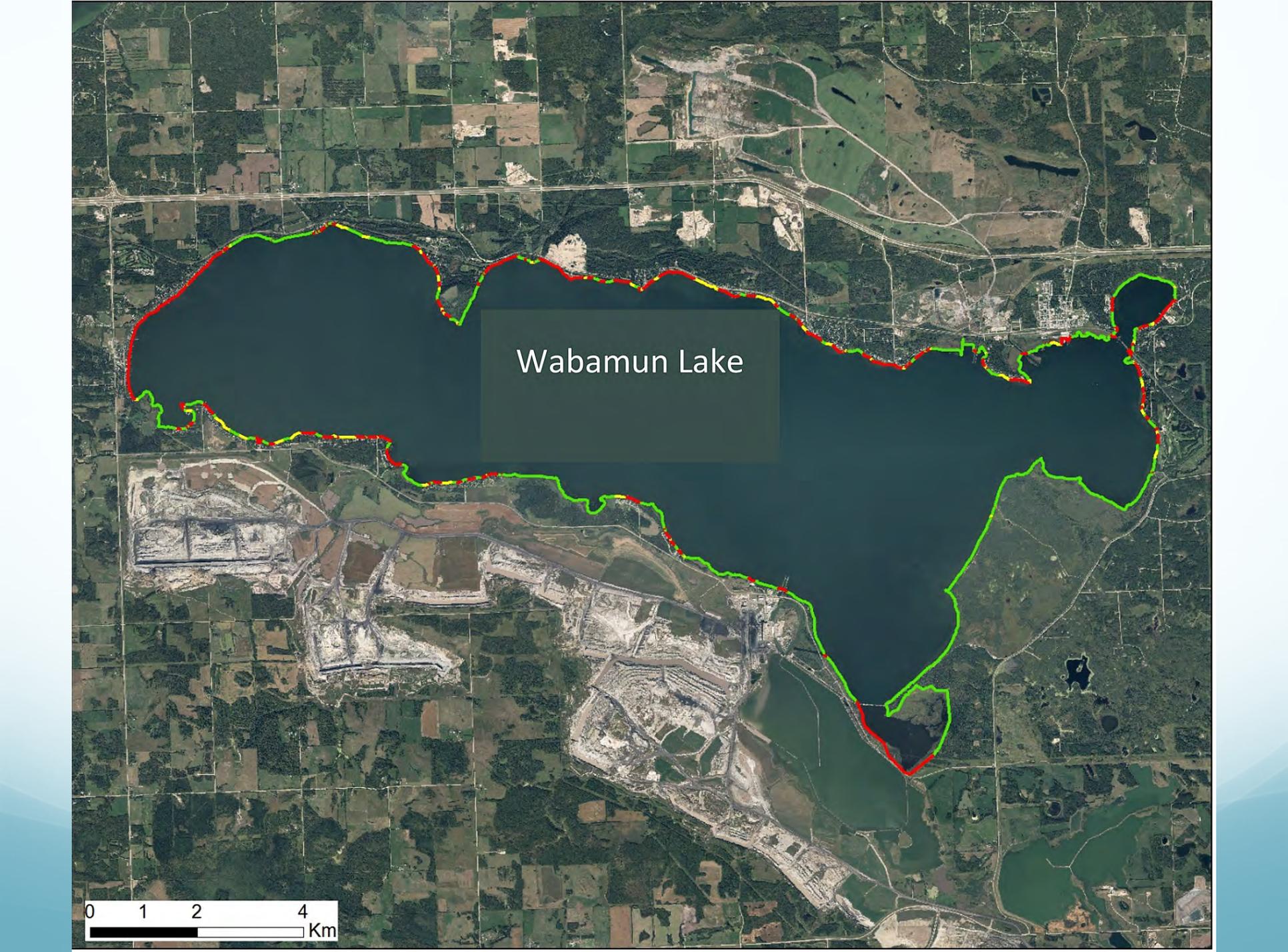




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An aerial photograph of Wabamun Lake, a large, irregularly shaped body of water. The lake is filled with dark blue water. A red line and a green line trace the shoreline of the lake. A semi-transparent grey rectangular box is centered over the lake with the text "Wabamun Lake" in white. The surrounding landscape is a patchwork of green fields, brown soil, and some buildings. A scale bar is located in the bottom left corner.

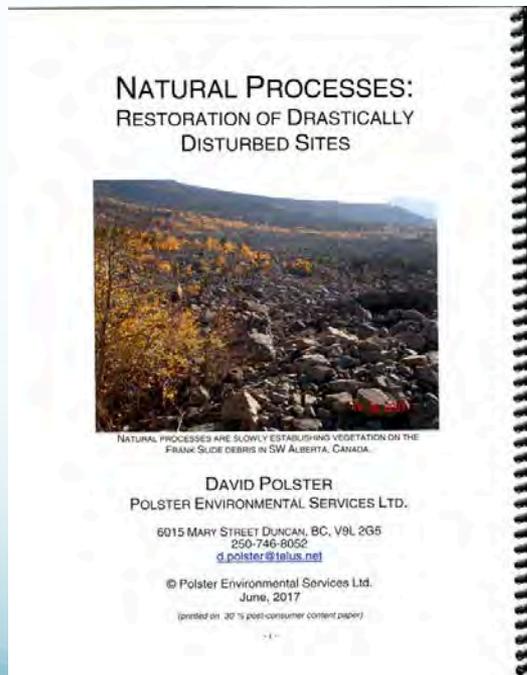
Wabamun Lake

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Commercial: David Polster's Manual,
Natural Processes: *Restoration of
Drastically Disturbed Sites* is available
for sale at our display table.

\$30 covers cost of printing.